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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,661	03/10/2004	Kei Hiruma	9319G-000730	3945

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EXAMINER	
SCHECHTER, ANDREW M	
ART UNIT	**PAPER NUMBER**
2871	

DATE MAILED: 03/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/797,661	HIRUMA, KEI	
	Examiner	Art Unit	
	Andrew Schechter	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) *1-15 and 25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *16-24 and 26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/10/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *NPL document*.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

2. Claims 23 and 24 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 23 recites a liquid crystal device made using the liquid crystal arrangement device of the independent claim 20. It is therefore a product-by-process claim, which is limited only by the structure of the device, not the manufacturing steps recited. Therefore, the scope of dependent claim 23 is broader (considerably) than that of the independent claim 20 from which it depends, and claim 23 could be infringed without claim 20 being infringed. Claims 23 and 24 are therefore improper.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct

from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 16, 17, 20, and 21 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 3 of copending Application No. 10/850,837 (see US 2005/0018125). Although the conflicting claims are not identical, they are not patentably distinct from each other because copending claim 3 clearly anticipates these claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 20, 23, and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by *Hsieh et al.,* U.S. Patent No. 6,867,840.

Hsieh discloses [see Fig. 3E, for instance] a liquid crystal arrangement device comprising a discharge unit for discharging liquid crystal [170] to arrange the liquid crystal on a substrate [100], the discharge unit comprising a plurality of nozzles which discharge liquid crystal in a form of liquid droplets, and there is an interval between the plurality of nozzles. The remaining limitation, that the interval is determined based on a diameter of the liquid droplets after impact of the liquid droplets on the substrate, is a product-by-process limitation [see MPEP 2113]; the claim is only limited to the structure implied by the steps, and in this case the limitation does not structurally distinguish the claimed invention from the prior art. Claim 20 is therefore unpatentable.

Considering claim 23, *Hsieh* discloses a liquid crystal device comprising liquid crystal. The further limitation that the liquid crystal is arranged using a liquid crystal arrangement device according to claim 20 is a product-by-process limitation which does not structurally distinguish the claimed invention from the prior art (even were claim 20 not met by *Hsieh*). Claim 23 is therefore anticipated. *Hsieh* also discloses an electronic device, so claim 24 is also anticipated.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 16-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Hsieh et al.,* U.S. Patent No. 6,867,840 in view of *Yamamoto et al.,* Japanese Patent Document No. 09-138410.

Hsieh does not explicitly state what is considered when determining the arrangement pitch of the liquid droplets. *Yamamoto* teaches [see Fig. 7] that when using an ink-jet/nozzle technique, the diameter of the liquid droplets after impact of the liquid droplets on the substrate should be considered, since having droplets too far apart [as in Fig. 7b] leads to separated droplets on the substrate and an uneven coverage of the substrate, for instance. It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to use a method in which an arrangement pitch of the liquid droplets is determined based on a diameter of the liquid droplets after impact on the substrate. Claim 16 is therefore unpatentable.

The arrangement pitch of the liquid droplets in *Hsieh* is the interval between the nozzles, so the interval between the nozzles would be determined similarly, so claim 20 is also unpatentable.

The arrangement pitch, as seen from *Yamamoto*, is a result-effective variable whose optimization would have been obvious to one of ordinary skill in the art at the time of the invention. Furthermore, *Yamamoto* teaches having it be roughly equal to the diameter of the liquid droplets after impact (to obtain even coverage over the substrate).

Claim 17 is therefore unpatentable. This applies similarly to the interval between the nozzles, so claim 21 is also unpatentable.

Hsieh discloses a plurality of pixel regions composed of a plurality of pixels on the substrate and coating the liquid droplets onto each of the plurality of pixel regions, so claim 18 is also unpatentable. The interval between the nozzles and the arrangement pitch of the liquid droplets in *Hsieh* appears to be roughly equal to the arrangement pitch of the plurality of pixel regions; whether it is or not, as discussed above this is a result-effective variable whose optimization would have been obvious to one of ordinary skill in the art at the time of the invention; it would therefore have been obvious to one of ordinary skill in the art at the time of the invention to optimize it to be roughly equal to the diameter of the liquid droplets after impact, so claim 19 is also unpatentable.

Hsieh discloses a plurality of pixel regions arranged on the substrate, and appears to disclose aligning each impact location of the liquid droplets with each location of the pixel regions (if not, this would have been an obvious matter of optimization as discussed above). However, *Hsieh* does not disclose a drive system for moving the nozzle and the substrate relative to each other (*Hsieh* shows only a cross-sectional slice of its device, and is silent on how the entire substrate is covered). *Yamamoto* discloses [see Figs. 6 and 7, for instance] an inkjet device with a plurality of nozzles [Fig. 6] as shown in *Hsieh*, which covers the entire substrate by being moved by a drive system [inherent in Fig. 7]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use such a drive system in the device of *Hsieh*,

motivated by the desire to use a single small set of nozzles to efficiently cover substrates of varying sizes. Claim 22 is therefore unpatentable.

This is an LCD and an electronic device, so claims 23 and 24 are unpatentable as well.

9. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Hsieh et al.,* U.S. Patent No. 6,867,840 in view of *Yamamoto et al.,* Japanese Patent Document No. 09-138410 in view of *Shigemura,* U.S. Patent No. 6,667,795.

Hsieh discloses forming liquid crystal on one of a pair of substrates by an ink jet process so as to form a liquid crystal between the substrates. It also discloses forming a substrate with a color filter layer and an alignment film, but does not appear to disclose using inkjet to form them.

Shigemura discloses forming a color filter using an inkjet process, and it would have been obvious to one of ordinary skill in the art at the time of the invention to do so, motivated by *Shigemura's* teaching that this allows the position and amount of liquid discharged to be freely controlled, so that satisfactory color filter can be obtained [col. 1, etc.].

Yamamoto discloses forming an alignment film using an inkjet process, and it would have been obvious to one of ordinary skill in the art at the time of the invention to do so, motivated by *Yamamoto's* teaching that *Yamamoto's* method can provide a uniform alignment layer and thereby improve the display quality [abstract, etc.]. Claim 26 is therefore unpatentable.

Election/Restrictions

10. Applicant's election without traverse of Group II, claims 16-24 and 26, in the reply filed on 29 December 2005 is acknowledged.

11. Claims 1-15 and 25 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made without traverse in the reply filed on 29 December 2005.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (571) 272-2302. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Andrew Schechter
Primary Examiner
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19 March 2006